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THE ROMANTIC ASPECT OF NUMBERS

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THE events of the past few years have made it clear that the mind of man is still a primitive organism in spite of its scientific veneer. This is confirmed by the fact that many of our most fundamental activities pivot around certain time-honored emblems and symbols inherited from an age when few could read or write, such, for instance, as the cross and triangle. Moreover the use of symbolism is an important factor in modern business, as the whole psychology of modern advertising is based on this ancient principle of using some particular device to stand for an idea. Evidently the value of symbolism consists in presenting an idea in such an impersonal form that each may interpret it in accordance with his own individual ideas and experience. Moreover, certain emblems call forth ideas or sentiments to which it would be impossible to give universal expression. Consider, for instance, the varying emotions called forth in a mixed audience when the Star-Spangled Banner is played or displayed. In religion especially, where ideas are frequently of such a nature as to transcend ordinary expression, symbolism has always found extensive use. Thus the symbolism used in the Scriptures is such as to make a universal appeal, independent of race or age, whereas dogmatic theology, at least as regards its formal expression, is necessarily a function of the particular time and place in which it originated.

The symbol which has always stood foremost in religion is the cross. Its most ancient form is the swastika, which has been found in the relics of the bronze age, and was common to races as widely separated as the Hindoos, Persians, Chinese, Japanese and the Indians of both North and South America. Subsequently this pagan emblem of good luck was invested with all the spiritual significance of the Christian religion, while to-day, as the Red Cross, it embodies the humanity of all the world. The triangle is another survival of primitive symbolism. In fact, the modern Red Triangle, inscribed with the trilogy "Spirit, Mind, Body," is exactly the symbol used by Pythagoras over twenty-five hundred years ago as the emblem of his pagan school of philosophy.

The symbolism developed by the pagan nations of antiquity shows clearly their materialistic tendencies and beliefs. The most extensive source of such symbolism is that found in the literature of the Greeks. Thus in the figurative language of the Greeks, Mount Ætna was the forge of Vulcan; and the moon was the chariot of Diana; while in the last book of the *Odyssey* Homer tells us that while the Greeks were overwhelmed with sorrow for Achilles, the sea became violently agitated, which Nestor interpreted as the coming of Thetis and her nymphs to lament the death of her son. The most characteristic expression of this mystic symbolism is found in the Grecian oracles which were the purest fiction of the imagination, interpreting at the dictates of fancy the rustling of the leaves of the sacred oaks, or the dashing together of the bowls suspended in the sacred grove.

The ancient customs of all races show a belief in the action of numbers on the course of human events. Thus from the time of the calling of Abraham, Egypt found a mystic significance in the letters of the word Nile, the numerals represented by these letters making 365, the number of days in the year. The Persians also found the same meaning in the word Mithras. The Greeks had no number system properly speaking prior to the Trojan War, which occurred about 1200 B. C. At an early date, however, certain numerals were regarded as endowed with peculiar virtues. Thus Greece had her 7 sages; the world its 7 wonders; 7 great captains united before Thebes; every 7 years was supposed to determine a change in the nature and temperament of man; in a serious illness the 7th, 14th and 21st days were regarded as critical; while the 70th year was considered the most fatal to old men. The numeral 12 was also used as the symbol of completeness, as applied for example to the 12 signs of the zodiac; the 12 labors of Hercules, etc., and still persists in our division of day and night into 12 hours each; the division of the year into 12 months; and the commercial use of dozen.

Probably the numeral 12 was originally chosen as a standard unit because it contained so many small factors, as this is the reason why it is still retained as a base in spite of the efforts to replace it by the metric system. All primitive nations found fractions very difficult, and even the Egyptians, who were most proficient in fractions, used methods that were very long and cumbersome. It was a great advantage, therefore, to have a standard unit which could be divided into parts without giving common fractions, and 12 was such a number, as $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$ and $\frac{1}{6}$ of 12 were all integers. The numeral 5 was

also used, this being the symbol of the Egyptian god Apis, and represented in Egyptian hieroglyphics by a five-pointed star. This latter symbol we have also inherited from the past, and it appears to-day in the stars of our national emblem. These two units, 12 and 5, appear to have been combined by the Babylonians in their so-called sexagesimal system, in which 60 is the standard unit or base. Evidently the practical reason for the choice of 60 is that it contains so many small factors that it can be subdivided to a much greater extent than 12 without involving the use of common fractions. This unit 60 is another element of our ancient heritage, appearing in our division of time and of angular measurement into 60 minutes and 60 seconds.

In developing their number symbolism the Greeks were empirical, making the material facts conform to their theories. For instance, Empedocles added a fourth element, earth, to the three elements, air, fire, and water, recognized before his time, because the moral virtues were four in number, namely force, temperance, prudence and justice. Similarly, Hippocrates regarded the numeral 5, representing the five senses, as the symbol of health; and Plato regarded the numeral 3 as representing the three faculties of the human soul, namely intelligence, will and memory, in the belief that this three-fold division appeared in the body as head, trunk and limbs, and in morals and art as the good, the true and the beautiful. Again when two warriors met in combat, the Greeks believed that the one whose name had the most letters in it would be the victor, this being regarded as the mystic reason why Achilles triumphed over Hector.

As the ideas of the Greeks became more definite and scientific they were impressed by the fact that number is the manifestation of thought in the material universe. In particular they were struck by the numerical intervals of the musical scale, from which they inferred that nature had imposed similar mathematical laws on the course of natural events. In particular they saw another expression of the same law in the intervals of the planetary system, and because of this similarity they spoke of the "music of the spheres," not as a poetic fancy but as a mathematical relation. Here again appears the numeral 7 associated with the 7 tones of music, the 7 planets known to the ancients, the 7 Pleiades, etc.

The highest development of Grecian number symbolism appeared in the system originated by Pythagoras and his school. The distinguishing feature of this system was the association of certain physical attributes with the properties of numbers.

For instance the Pythagoreans regarded 7 as the maiden's number because the sum of the digits in successive multiples of 7 produced all the other digits; for example, $7=7$; 14 gives $1+4=5$; 21 gives $2+1=3$; etc. Similarly 8 was the symbol of death since the sum of the digits in successive multiples of 8 decrease successively by 1; for example, $8=8$; 16 gives $1+6=7$; 24 gives $2+4=6$; etc. For the same reason 9 was regarded as the symbol of immortality since the sum of the digits in successive multiples of 9 remains constant; for example, $9=9$; 18 gives $1+8=9$; 27 gives $2+7=9$; etc. In short, numbers were regarded as the cause of events, and numerical operations as having their counterpart in the operation of natural laws. Numerals were regarded therefore not merely as passive symbols but as active principles of good and evil, capable of reproduction and combination by mathematical operations.

This Greek principle of number symbolism is in strong contrast to the Hebrew use of numerals in a figurative sense. The ancient Hebrews were unscientific to the last degree, and numbers had no special significance to them except as associated with certain events and occasions. For instance, the doctrine of the Trinity gave prominence to the numeral 3, and in consequence this numeral came to be naturally associated with Deity without the numeral itself being regarded as possessing any intrinsic virtues or having any causal significance. Thus the incident recorded in Genesis 18, where Abraham received three angels and worshipped one, calling him Lord, has been taken to indicate that the threefold apparition symbolized Deity to him, but there is no evidence in support of this view, because in the next chapter it appears that on the following day two angels appeared to Abraham's nephew Lot and he also worshipped one, calling him Lord. The fact is that all the ordinances and doctrines of the Old Testament were highly symbolic, using not only numerals but also including colors, objects, events and persons, regarded as antitypes in the prophetic sense, but at the same time there is no evidence anywhere in Old Testament literature that any of the intrinsic properties of numbers were even known, much less regarded as exerting any mystic influence on human destiny. The nature of the number symbolism in the Old Testament is apparent in the use of the numeral 7. The doctrine of the six days of creation followed by the rest from labor on the seventh was perpetuated in the division of time into the week of 7 days, naturally regarded as signifying the perfection of works. As the bow in the cloud, the sacred emblem of the divine covenant, revealed

7 primary colors, there was additional reason for regarding the numeral 7 in a generic sense as the symbol of completeness. The Hebrews must also have recognized a divine sanction for the figurative use of this numeral such for instance as appears in Pharaoh's dream of 7 years of plenty and 7 years of famine and its actual fulfillment; in the 7 plagues imposed on the Egyptians for their refusal to free the Israelites; in the efficacy of the 7 priests bearing 7 trumpets who encompassed Jericho 7 times to its destruction; in the fact that the child raised by Elijah sneezed 7 times; in the direction to Naaman to bathe 7 times in the Jordan; and in the 7 times 7 or 49 years which intervened between the years of Jubilee; while a further sanction to the symbolic use of this numeral was given by Christ himself in his injunction to forgiveness "not . . . until 7 times but until 70 times 7"; in casting 7 demons out of Mary Magdalene, and in the 7 words on the Cross.

This primitive aspect of sacred number symbolism, however, must not be confused with the figurative meaning given to the same numerals in New Testament literature, which shows many traces of Greek influence, especially in the mystic number symbolism used in Revelation. The importance of the type figured in Old Testament teachings, as distinguished from that of the numeral associated with the type, is apparent in such connections as the 3 days' journey of Isaac into the wilderness; and the 3 days spent by Jonah in the whale, as symbolizing the death and resurrection of Christ, the number 3 in each case being merely incidental to the type. Again the number 12 in Scripture gained its significance from the 12 patriarchs from whom sprang the 12 tribes. Its use in the New Testament may be referred in each case to this original meaning, as for example in the 12 foundations and 12 gates of the Holy City; the 144,000 of the redeemed Israelites; the 24 Elders, etc., even its use as applied to the 12 Apostles signifying the substitution of the new dispensation for the old. The numeral 40 is also conspicuous in the Old Testament, although its use is not such as to make it apparent what it signified. Thus the flood descended for 40 days; Saul, David and Solomon each reigned 40 years; the Israelites wandered 40 years in the wilderness; and Moses, Elijah and Christ each fasted 40 days.

When the New Testament was written the Hebrews had outgrown their isolation and were in close contact with Greek and Roman civilization. In fact the greater part of the New Testament was written in Greek. The effect of this Grecian influence is nowhere more apparent than in the mystic character given to number symbolism, which is especially manifest

in the Apocalypse of St. John. In this remarkable vision, numbers appear with great frequency and always with a cryptic meaning. To simply enumerate the more important instances of such usage, the number 4 is applied to the 4 beasts, the 4 angels, the 4 corners of the earth, and the 4 winds of the earth. 7 is applied to the 7 churches, the 7 spirits, the 7 stars, the 7-branched candlestick, the 7 lamps of fire, the 7 thunders, the 7 trumpets, the dragon with 7 heads and 7 crowns, the 7 seals, the 7 last plagues, and the 7 golden vials. 12 appears in the 24 elders, interpreted as the 12 patriarchs and the 12 apostles; in the 144,000 redeemed, representing 12,000 from each of the 12 tribes; in the crown of 12 stars; in the 12 foundations and 12 gates of the Holy City, and in the 12 angels at the gates; in the length of the city, 12,000 furlongs; in the height of its wall, 144 cubits; and in the 12 manner of fruits of the tree of life. The periods of time specified are equally cryptic, as used, for instance, of the 1,260 days of prophecy; the 42 months of the Gentiles' dominion; the 42 months of the dragon's power; the hour, day, month and year during which the 4 angels should slay $\frac{1}{3}$ of mankind; the 10 days of tribulation; the time, times and half a time of the woman's concealment; and the $3\frac{1}{2}$ days that the dead should lie unburied.

During the Middle Ages the attempt to reconcile the doctrines of Christianity with the classical philosophy of the Greeks resulted in the development of a school of thought called Scholasticism. Naturally the book of Revelation with its highly figurative language appealed strongly to the Schoolmen, and for centuries afforded a fertile field for speculation. One of the foremost in applying the properties of numbers to theology was the noted ecclesiastic Alcuin, who followed the example of the Greeks in investing numbers with certain physical attributes. For instance, he applied 6 to the Deity because he regarded 6, like the Greeks, as a perfect number since the sum of its divisors is $1 + 2 + 3 = 6$; while 8, being an imperfect number, he applied to the descendants of Noah, the number of persons in the ark being 8. Instances of this form of Scriptural interpretation are abundant. Tertullian said that these numerical details were imposed by sovereign wisdom and should not be regarded as trivial. St. Isidore of Seville wrote a special treatise on the numbers mentioned in Scripture, while St. Jerome and St. Hilaire also used this form of interpretation. St. Augustine was perhaps the greatest master of arithmology, developing the idea in his work "On Music," and in his theological works. It is interesting to note the nature of

the symbolism he employed. 3 he regarded as a divine number and 4 as a terrestrial number, their sum, 7, applying to creation. The sum of 7 and 3, or 10, he regarded as signifying knowledge of God and creation, and 40 as signifying the accomplishment of all the works of the law. An instance of how St. Augustine applied these properties of number to Scriptural exegesis is found in his interpretation of the 38 years of the paralytic mentioned in John 5:5, namely, that since 38 lacked 2 of being 40, it implied that the man lacked the accomplishment of all the works of the law by 2 items, love of God and love of man.

St. Ambrose, the spiritual guide of St. Augustine, regarded the 40 days of the flood as representing a regenerating baptism. In the 24 elders of Revelation he saw the mystic properties implied in the factors of 24, namely 1, 2, 3, 4, 6, 8, and 12. Thus 1 signified God; 2 the two testaments; 3 the Trinity; 4 the four gospels; 6 the perfect number applied to creation; 8 the beatitudes or virtues; and 12 the apostles. Pope Gregory regarded the 5 talents of the parable as representing the 5 senses of man used for his salvation; the 2 talents as the union of intelligence and work; and the 1 talent as intelligence unused. The man of 5 talents by doubling his charge made 10, a perfect number.

In England, St. Adhelme, Bishop of Sherborne, wrote a treatise in which he reduced every use of 7 occurring in the Bible to an application of the 7 gifts of the Holy Spirit. Another famous English churchman, the Venerable Bede, also made a careful study of number symbolism in the belief that God had ordained all things with number, weight and measure.

This universal belief in number symbolism held in common by the Fathers of the Catholic Church is enshrined to-day in the ritual of the Church. Thus the Church venerates 7 gifts of the Holy Spirit; recognizes 7 capital sins and 7 virtues; and has instituted 7 sacraments, 7 canonical hours, and 7 psalms of penitence.

One of the most interesting and characteristic illustrations of Medieval interpretation of Scripture in terms of number symbolism is found in a commentary on the work of Prudentius, published anonymously in the ninth century, A.D.* The reference is to Genesis 18, which relates that Abraham with 318 servants made war against 4 kings and overcame them. To understand the commentary it is necessary to bear in mind that to medieval writers 3 symbolized the Trinity, 4 was the

* "Commentaire Anonyme sur Prudence," par John M. Burnam, Paris, Picard et Fils, 1910.

terrestrial number, 6 the perfect number, 8 stood for the beatitudes or perfection of faith, and 10 for the decalog or perfection of works. To bring out the characteristic features of this example, the Latin original is given as well as the English translation.

Per trecentos fidem Sanctæ Trinitatis accipere possumus, et ita iungendum si noverimus quid possint: iste numerus id est CCC Tau littera quæ figuram crucis Christi ostendit sine dubio exprimitur: X vero et VIII perfectionem operum cum fide Sanctæ Trinitatis designant. Sexies enim terni vel ter seni X et VIII conficiunt. Hoc itaque bellum Abrahæ contra IIII reges allegorice significat bellum virtutum et vitiorum. Pater ergo fidei et prima via credendi Abram pro fratre suo Loth contra IIII reges dimicavit et vicit non in multitudine exercitus sed in trecentis X et VIII vernaculis expeditis. Sic et unusquisque nostrum pro anima sua tamquam Abraham pro fratre contra IIII reges id est contra spirituales nequitias spiritale bellum gerat cum trecentis X et VIII vernaculis id est cum auxilio Sanctæ Crucis et perfectione bonorum operum atque fide Sanctæ Trinitatis.

A free translation of this passage reads:

By 300 we are accustomed to understand faith in the Holy Trinity, and the context in this case verifies this meaning. This number CCC is the Greek τ , a letter which undoubtedly represents the cross of Christ. X and VIII, I believe, denote the perfection of works with faith in the Holy Trinity. Six taken three times, or three taken six times, make the X and VIII. And so this war of Abraham against the four kings allegorically signifies the war of the virtues and vices. Thus the father of truth and original belief, Abraham, contended for his brother Lot against four kings, and conquered not by virtue of a large trained army, but with 300, 10 and 8 light-armed servants. Just as each one of us contends for his soul, so Abraham contended for his brother against four kings, that is, waged spiritual war against spiritual iniquity with 318 servants, namely, with the aid of the Holy Cross, the perfection of good works, and faith in the Holy Trinity.

Whatever one may think of such interpretations in general, the fallacy in this particular case is obvious, for although the letter τ was actually used to represent 300 in the so-called Alexandrian notation of the Greeks, this notation was invented in the third century B.C., long after the time of Abraham, as well as long before the cross had gained its significance as a Christian emblem.

The most conspicuous use of number symbolism in the Scriptures and the one which has always exerted the strongest fascination by reason of its evident challenge to intelligence is the passage in Revelation 13:18, which reads:

Here is wisdom. Let him which hath understanding count the number of the beast; for it is the number of a man; and his number is six hundred threescore and six.

To the medieval theologians the meaning of this reference was

a never-ending source of speculation, while during the Reformation it became one of the most valued weapons in their theological arsenal.

For example, Bossuet, Bishop of Meaux, ascribed the number 666 to the Roman emperor Diocletian, persecutor of the Church. The true name of Diocletian, he said, was Diocles, taken from his mother Dioclea, and which he Latinized on his accession to the throne. Writing the name in the form Diocles Augustus and adding the Roman numerals which appear, the result is 666 as indicated below:

$$\begin{array}{r}
 D = 500 \\
 I = 1 \\
 O \\
 C = 100 \\
 L = 50 \\
 E \\
 S \\
 \\
 A \\
 V = 5 \\
 G \\
 V = 5 \\
 S \\
 T \\
 V = 5 \\
 S \\
 \hline
 666
 \end{array}$$

Another famous instance was the interpretation given by Stifel, a notable (and notorious) mathematician of the sixteenth century. Stifel was an Augustinian monk who, following Luther's example, became a Protestant minister, and who ascribed his conversion to the fact that he noticed that the number of the beast applied to Pope Leo X. This he proved like Bossuet by writing the title in the Latin form LEO DECIMVS and adding the Roman numerals which appear. M he rejected, because, he said, it clearly stood for "mysterium." Adding the remaining numerals, the result is $L + D + C + I + V = 656$, and as this number is 10 less than the given number 666, he asserted that it distinctly implied that it referred to Leo the Tenth.

However absurd these particular attempts at interpretation may appear, the wording used by St. John is such as to make it evident that he really referred to some particular person, and probably used a symbolism familiar to a certain sect of his followers. The remarkable fact is that the meaning of this reference was forgotten almost as soon as written, and remained an unsolved riddle for eighteen centuries; while a still

more curious circumstance is that in one year, 1835, four men, Benary, Fritzsche, Hitzig and Reuss, discovered independently that it actually referred to Nero.

Apparently none of these men, nor any one since their time, has made any application of this discovery, although it seems reasonable to suppose that it might serve as a key to the entire code of Scriptural symbolism. It is worth while therefore to determine as nearly as possible the actual significance of its use.

Writing in a period of persecution when such a reference to Cæsar if made openly would mean not only the sacrifice of his own life but also the destruction of his writings, it seems natural to suppose that St. John would conceal his meaning by putting the reference in a form that would be understood only by the disciples. The Revelation was written in Greek, but the mistake made previously to 1835 was in always trying to interpret the number in terms of Greek or Latin numerals. Using the title in its Greek form but writing it in Hebrew characters, it becomes

קסדנרוז

In the number notation of the Hebrews these characters have the values

$$\kappa = 100, \delta = 60, \gamma = 200, \nu = 50, \rho = 200, \iota = 6, \zeta = 50,$$

the sum of which gives 666. Additional evidence in support of this interpretation is given by the fact that some ancient versions gave the number as 616 instead of 666. Writing the title in the Latin form, Emperor Nero, that is, leaving off the last letter and giving the remaining letters their Hebrew equivalents as above, the sum is 616.

The only direct evidence tending to establish the date of St. John's vision is a statement by Irenæus to the effect that it occurred at the end of the reign of Domitian, which would place the date at 95 or 96 A.D. Irenæus was a disciple of Polycarp, the Christian martyr, who was himself a disciple of St. John, and his statement therefore has a certain weight. However, Irenæus seemed to be ignorant of what was meant by the number of the beast, and from internal evidence in St. John's writings scholars have come to the conclusion that he was mistaken in regard to the date he assigned to their authorship.

The uncertainty as to the date to be assigned to Revelation is due to the fact that it is written in very rugged Greek, whereas in the Gospel of St. John the diction is far more polished. It is known that St. John died about A.D. 98 at the age of nearly 100, and if, as Irenæus said, Revelation was

written in A.D. 95 or 96, near the close of his life, there would be no possible explanation of the difference in style except by assuming that the two writings were of different authorship. To explain this discrepancy it has been suggested that Revelation was written not during the reign of Domitian as emperor but when he was City Prætor or Judge, about the year 67 A.D. Naturally a judge might well be responsible for the exile of St. John to Patmos, and Irenæus, knowing that Domitian was responsible, made the mistake of placing the act in his reign as emperor instead of during his term as prætor. As the last 30 years of St. John's life were spent at Ephesus in close association with Greeks, the earlier date assigned to Revelation would account perfectly for the more fluent style of his later writings.

To determine how far this explanation fits in with the supposition that Antichrist referred to Nero, turn to Revelation 17:10-11, where we read:

And there are seven kings: five are fallen and one is and one is not yet come; and when he cometh he must continue a short space. And the beast that was and is not even he is the eighth, and is of the seven and goeth into perdition.

Now compare this statement with the chronology of the Cæsars during St. John's lifetime, which is as follows:

Augustus Cæsar.....	31 B.C.-14 A.D.	Birth of St. John at beginning of Christian Era.
Tiberius	14-37	
Caligula	37-41	
Claudius	41-54	
Nero	54-68	First persecution of Christians.
Galba	}..... 68-69	Military aspirants to the throne.
Otho		
Vitellius		
Vespasian	69-79	
Titus	79-81	
Domitian	81-96	Second persecution of Christians.
	98-100	Death of St. John.

With the exception of the three military chiefs, Galba, Otho and Vitellius, who were never actually seated on the throne, we have here a list of eight kings, fifth of whom is Nero, in whose reign occurred the first persecution of the Christians, and eighth of whom is Domitian, in whose reign occurred the second persecution. In Revelation the reference to Antichrist has always been interpreted as his personification in a man, and if, from the standpoint of the disciples, Antichrist was personified in Nero, he was no less so in Domitian, who was hardly less severe in his persecution. In fact St. John says of the beast (Rev. 13:7) that "it was given unto him to make

war with the saints and to overcome them"; and in 17:8 refers to Antichrist as "the beast that was and is not and yet is."

The meaning of all this becomes intelligible if the eight kings referred to means the eight Cæsars who ruled during St. John's lifetime. "Five are fallen and one is" puts the date of Revelation in the reign of Vespasian, A.D. 69-79, which agrees perfectly with the theory that the exile of St. John occurred in the prætorship of Domitian, about A.D. 69 or 70. "One is not yet come and when he cometh he must continue a short space" would then refer to Titus, who ruled for the short space of two years. "And the beast that was and is not, even he is the eighth, and is of the seven and goeth into perdition" becomes Domitian, the persecutor of the disciples.

With this key, nothing could be clearer than the meaning of the seventeenth chapter of Revelation. For the same reason that induced St. John to conceal the name of Nero, the name of Rome is also concealed by calling it Babylon, which ever since the Captivity had been the Hebrew synonym for civic wickedness. To make his meaning unmistakable, St. John personified Rome under the guise of a woman sitting on seven mountains, the classic seven hills of Rome, and "drunken with the blood of the saints and the blood of the martyrs of Jesus." And then referring to the great fire which occurred during the reign of Nero, or prophesying of the second great fire which occurred in the reign of Titus, he says in 18:17-19 that "as many as trade by sea stood afar off and cried when they saw the smoke of her burning saying 'what city is like unto this great city . . . for in one hour is she made desolate.'"

If this evidence may be said to establish the date of Revelation, many of the references become clear, and give a basis for further interpretation which has so far been lacking. The popular interest in the book now manifest may therefore be an indication that this remarkable vision will no longer be wholly unintelligible, nor its study fruitless.

The various instances cited above serve to indicate the important rôle played by number symbolism in the intellectual development of mankind. Wherever mind has reacted to the stimulus of natural phenomena the number concept has resulted as the inevitable expression of the laws governing the material universe. The properties of number, first accepted as a fact, in process of time came to be regarded as symbolic, and only in modern times has the mind been able to grasp their true significance as one aspect of the great principle of functionality.